

Two new species of *Solanum* L. (Solanaceae) from central Queensland

A.R.Bean

Summary

Bean, A.R. (2010). Two new species of *Solanum* L. (Solanaceae) from central Queensland. *Austrobaileya* 8(2): 165–170. *Solanum pisinnum* A.R.Bean sp. nov. and *S. orgadophilum* A.R.Bean sp. nov. from central Queensland are described and illustrated. Notes on affinities, conservation status, distribution, etymology, habitat and phenology are provided.

Key Words: Solanaceae, *Solanum*, *Solanum orgadophilum*, *Solanum pisinnum*, Australia flora, Queensland flora, new species, taxonomy

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Introduction

Solanum L. is represented in Australia by more than 100 species indigenous to the four eastern States (Bean 2005-onwards), and many more in the north and north-west of the continent. While the genus is species-rich, *Solanum* species are rarely prominent in the landscape. Many Australian species are less than one metre high, and the floral displays can be inconspicuous. Often, they occur only in areas recently disturbed by fire or machinery, and are short-lived. For these reasons, *Solanum* distribution, ecology and even taxonomy remain quite poorly known.

Both of the species described in this paper are short-lived perennials, less than 50 cm tall, and of limited distribution. They belong to *Solanum* subgenus *Leptostemonum* (Dunal) Bitter.

Materials and methods

Herbarium specimens at BRI and MEL were examined. Terminology and measurement methods are as in Bean (2004). Measurements of stems, leaves, prickles, hairs and pedicels were made from dried material. Measurements of corolla, style, anthers and fruits were made from material preserved in spirit or reconstituted. Both species have been studied in the field.

Abbreviations: N.P. (National Park).

Taxonomy

Solanum pisinnum A.R.Bean **species nova** affinis *S. centrali* sed statura minore, aculeorum absentia aequabili, corolla non profunde lobata, corollae pagina interiore valde hirsuta, ovario styloque glabro, inflorescentiis 1–3-floris et fructus exocarpio 1.8–2.3 mm crassitudine differens. **Typus:** Queensland. MITCHELL DISTRICT: 69.8 km from Jericho, along Tumber Road, 21 May 2009, *A.R.Bean 28966* (holo: BRI; iso: CANB, DNA, MEL, NY).

Erect herbaceous resprouter, 0.2–0.4 m high. Stems without prickles. Branchlets grey, yellow or rusty; prickles absent; stellate hairs very dense, 0.3–0.5 mm diameter, stalks 0–0.2 mm long, lateral rays 7–8, porrect, central ray 0.8–1.5 times as long as laterals, not gland-tipped; type 2 hairs absent. Leaves ovate, entire; lamina 2.8–8.5 cm long, 1.1–4.2 cm wide, 2–2.5 times longer than broad, apex obtuse or acute, base obtuse or cordate; oblique part 0–3 mm long, obliqueness index 0–7 percent; petioles 0.8–2.6 cm long, 18–40% length of lamina, prickles absent. Upper leaf surface grey-green or grey, prickles absent, stellate hairs distributed throughout, dense or very dense 0.05–0.2 mm apart, 0.3–0.65 mm across, stalks 0.1–0.25 mm long, lateral rays 7–8, porrect, central ray 0.4–1.1 times as long as laterals, not gland-tipped; simple hairs absent, type 2 hairs absent. Lower leaf surface white, grey or yellowish, prickles absent;

stellate hairs dense or very dense, 0.05–0.2 mm apart, 0.4–0.7 mm diameter, stalks 0.1–0.3 mm long, lateral rays 7–8, porrect, central ray 0.4–1.1 times as long as laterals, not gland-tipped; simple hairs absent, type 2 hairs absent. Inflorescence supra-axillary, cymose (pseudo-racemose), common peduncle 2–15 mm long, rachis prickles absent, 1–3-flowered. Flowers 5-merous; pedicels at anthesis 4–13 mm long, 0.9–1.3 mm thick, prickles absent. Calyx tube at anthesis 3.5–4.5 mm long; calyx lobes at anthesis deltate, rostrate or attenuate, 2–4.5 mm long; prickles absent; stellate hairs very dense, yellow to rusty, 0.3–0.45 mm across, stalks 0–0.3 mm long, lateral rays 7–8, central ray 0.6–1.2 times as long as laterals, not gland-tipped. Corolla mauve or purple, 10–13 mm long, shallowly lobed, inner surface densely stellate-hairy; anthers 4.3–6.2 mm long, filaments 1.2–1.3 mm long; ovary glabrous; functional style 7.5–9 mm long, protruding between anthers, glabrous. Fruiting calyx lobes less than half length of mature fruit, prickles absent. Mature fruits 1 per inflorescence, globular, 12–17 mm diameter, yellowish-green, 2-locular; placenta sessile, semi-circular; mesocarp moist but not juicy, exocarp 1.8–2.3 mm thick; pedicels at fruiting stage 9–22 mm long, 1.1–1.4 mm thick at mid-point. Seeds pale yellow or brown, 3.1–3.4 mm long. **Fig. 1.**

Additional specimens examined: Queensland. MITCHELL DISTRICT: Idalia N.P., WSW of Blackall, SE of Emmet, along Emmet Pocket Road, Sep 1992, *Bennie s.n.* (BRI [AQ 549761]). WARREGO DISTRICT: Idalia N.P., Round Hole, Mar 1996, *Forster PIF18891* & *Ryan* (BRI).

Distribution and habitat: *Solanum pisinnum* is known from two areas; on the Great Dividing Range south of Jericho, and about 200 km further west in Idalia National Park (**Map 1**). At the type locality it grows in *Acacia longispicata* Benth. regrowth, with emergent trees of *Eucalyptus crebra* F.Muell., *E. chloroclada* (Blakely) L.A.S.Johnson & K.D.Hill and *Callitris glaucophylla* Joy Thomps. & L.A.S.Johnson in pale sandy soil. At Idalia N.P., it grows in *Acacia aneura* F.Muell. ex Benth. woodland in red sand.

Phenology: Flowers are recorded in March, May and September; fruits are recorded in May.

Affinities: Included in this species are some specimens that were attributed to *Solanum centrale* J.M.Black by Bean (2004), and *S. centrale* is no longer regarded as being indigenous to Queensland. *Solanum pisinnum* is closely related to *S. centrale*, but differs by the often smaller stature, the consistent lack of prickles, the shallowly lobed corolla (deeply lobed for *S. centrale*), the inner surface of the corolla hirsute throughout distal half (only at apex for *S. centrale*), ovary and style glabrous (both densely clothed in stellate hairs for *S. centrale*), inflorescences with 1–3 flowers and 1 fruit (up to 7-flowered and 4-fruited for *S. centrale*), and pericarp 1.8–2.3 mm thick (0.8–1 mm for *S. centrale*).

Conservation status: The population at the type locality comprises more than 1000 stems, spread over an area of 1–2 hectares. The species was not found in similar habitats nearby, despite active searching. The extent of the species at Idalia N.P. is not known. Under the Red List guidelines (IUCN 2001), a category of “Data deficient” is recommended until further survey work is carried out.

Etymology: The specific epithet is derived from the Latin word *pisinnus*, meaning small or little. This is a reference to the small stature of this species.

***Solanum orgadophilum* A.R.Bean species nova** affinis *S. jucundo* sed statura minore, aculeis brevioribus, foliis ovatis usque late ovatis, petiolo longitudine 28–83 centensimas partes laminae aequanti, corollae pagina inferiore glabra et praesentia in solis densis argillaceis differens. **Typus:** Queensland. LEICHHARDT DISTRICT: Kettle Street, Capella, 6 May 2010, *A.R.Bean 29648* (holo: BRI; iso: CANB).

Erect herbaceous resprouter, 0.2–0.4 m high. Adult branchlets white, grey or brown; prickles 1–5 per decimetre, straight, acicular, 1–3.5 mm long, 5–8 times longer than wide, glabrous or with scattered stellate hairs on lower half; stellate hairs dense or very dense, 0.4–0.7 mm diameter, stalks 0–0.15 mm long; lateral rays 7–8, porrect; central ray 0.3–1.3 times as long as laterals, not gland-tipped; type 2 hairs absent. Adult leaves ovate or broadly ovate, margins entire but often

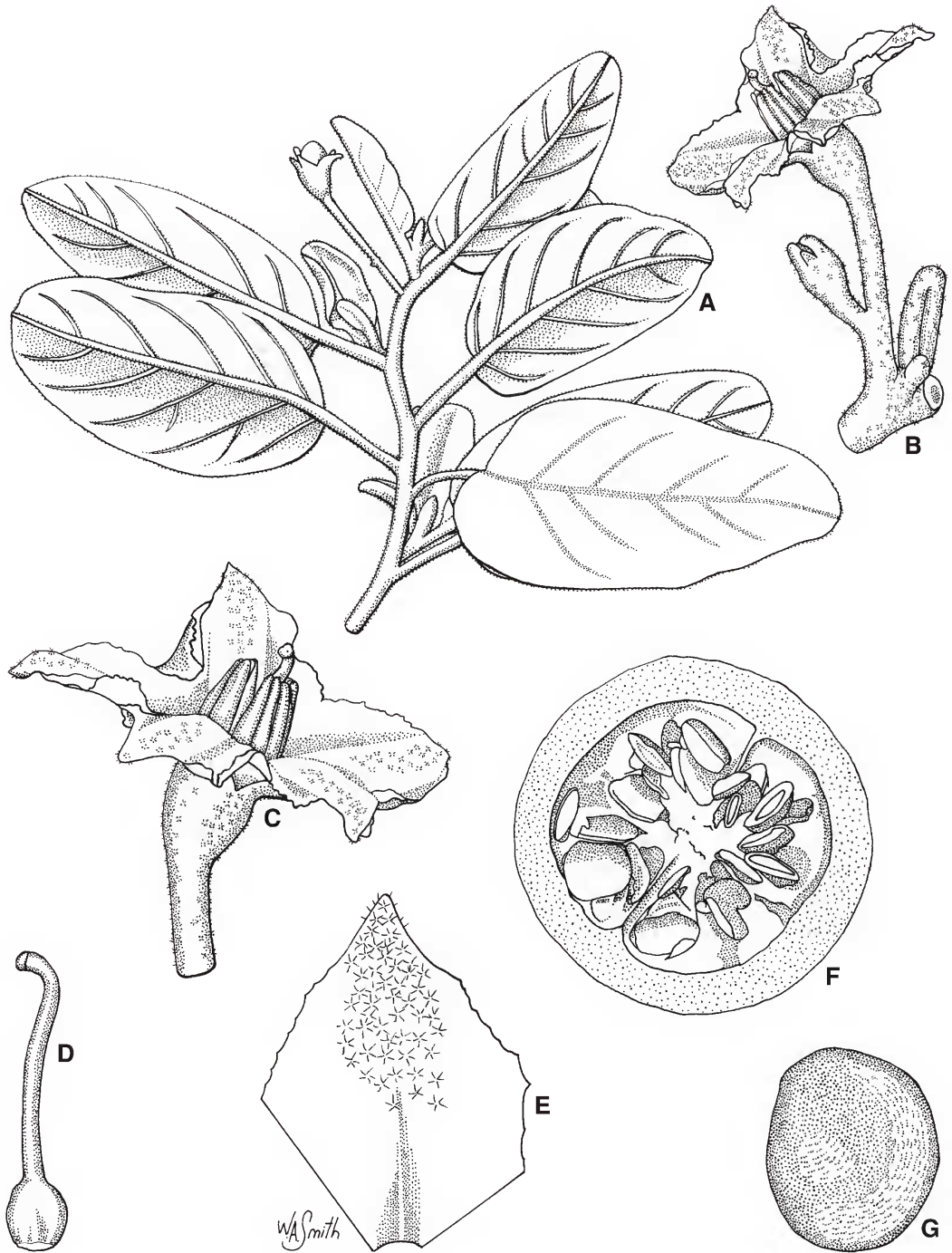


Fig. 1. *Solanum pisinnum*. A. fertile branchlet $\times 1$. B. inflorescence $\times 2$. C. open flower $\times 3$. D. ovary and style $\times 8$. E. inner surface of corolla $\times 8$. F. cross-section of mature fruit $\times 3$. G. seed $\times 8$. All from *Bean 28966* (BRI). Del. W.Smith.

undulate; lamina 6.5–20 cm long, 3.8–11.7 cm wide, 1.4–2 times longer than broad, apex obtuse or acute, base obtuse or cordate, oblique part 0–2 mm long, obliqueness index 0–2 percent; petioles 3.2–8.4 cm long, 28–83 % length of lamina, prickles absent or rarely present. Upper leaf surface silvery-grey to grey-green, prickles absent; stellate hairs distributed throughout, moderately dense or dense, 0.1–0.25 mm apart, 0.3–0.4 mm across, stalks 0–0.1 mm long; lateral rays 6–8, porrect; central ray 0.2–0.7 times as long as laterals, not gland-tipped; simple hairs absent; type 2 hairs absent. Lower leaf surface white or grey, prickles absent; stellate hairs dense or very dense, 0.05–0.2 mm apart, 0.5–0.7 mm diameter, stalks 0–0.15 mm long; lateral rays 7–8, porrect; central ray 0.3–0.8 times as long as laterals, not gland-tipped; simple hairs absent; type 2 hairs absent. Inflorescence supra-axillary, cymose (pseudo-racemose), common peduncle 30–35 mm long, rachis prickles absent or rarely present, 3–6-flowered. Flowers 5-merous. Pedicels at anthesis 6–11 mm long, same thickness throughout, 0.5–0.9 mm thick at mid-point, prickles absent or rarely present. Calyx with tube 2.5–3.5 mm long; lobes deltate, 2–6 mm long; prickles absent; stellate hairs dense or very dense, brown or rusty, 0.3–0.4 mm across, stalks 0–0.1 mm long, lateral rays 8, central ray 0.8–1.2 times as long as laterals, central ray not gland-tipped; simple hairs absent; type 2 hairs absent. Corolla purple, 13–14 mm long, rotate, inner surface glabrous; anthers 4.8–5.5 mm long; filaments *c.* 1 mm long; ovary with stellate and type 2 hairs. Functional style *c.* 8.5 mm long, protruding between anthers, with stellate hairs only. Fruits not seen. *Capella potato bush*. **Fig. 2.**

Additional specimens examined: Queensland, LEICHHARDT DISTRICT: 4 km SW by road from the Wolfgang Access road turnoff, on Moranbah – Clermont Road, May 2006, *Jessup 5241 & Thomas* (BRI, NSW); Peak Downs, *c.* 10 miles [16 km] NE of Capella, Jan 1954, *Everist 19 & Johnson* (BRI); Peak Downs, Jan 1951, *Everist 4398* (BRI); Copella [=Capella], in 1871, *Bowman s.n.* (MEL12574); Emerald, *s.dat.* [1879–1881], *O'Shanesy 40011* (MEL13077).

Distribution and habitat: *Solanum orgadophilum* is confined to the “Central Highlands”, from north-east of Clermont to

Capella, and was historically recorded from Emerald (**Map 1**). It grows in fertile cracking clay soil on flat or undulating terrain, in association with various grasses and forbs. The original vegetation was probably grassland or eucalypt open woodland.

Phenology: Flowers have been recorded for January and May.

Affinities: *Solanum orgadophilum* belongs to the *S. macoorai* group (Group 27B) of Bean (2004), but is rather taxonomically isolated within this group. It is perhaps closest to *S. jucundum* A.R.Bean, although many characters separate them, including plant height, prickles length, leaf shape, corolla indumentum and habitat. *Solanum orgadophilum* is somewhat reminiscent of *S. ellipticum* R.Br., but differs from it by the upright habit, the lack of prickles on the leaves and calyx, and the style covered by many stellate hairs. In the dichotomous key of Bean (2004), *S. orgadophilum* will most often key out to *S. argopetalum* A.R.Bean; however, that species has Type 2 hairs on the branchlets, much larger stellate hairs on the upper leaf surface with a longer central ray, common peduncle absent or very short, and a smaller white corolla.

Conservation status: The great majority of the habitat for this species has been utilised for cropping, and more recently further land has been taken for open-cut coal mining. Currently, the species is locally common on two freehold properties within the township of Capella. One population is on a vacant block where a building is to be erected in the next few years, while the other is in the backyard of an existing house, which is grazed and intermittently slashed.

A population, comprising up to 500 stems, was discovered on a road reserve on the Clermont – Moranbah road in 2006, but no plants have been seen there since 2008, as dense swards of tall grass now cover the site. Presumably the rhizomes of the *Solanum* are still alive at this site. It is not known whether the species still exists at “Peak Downs”.

Threats to the species include land modification (cropping, coal mining and

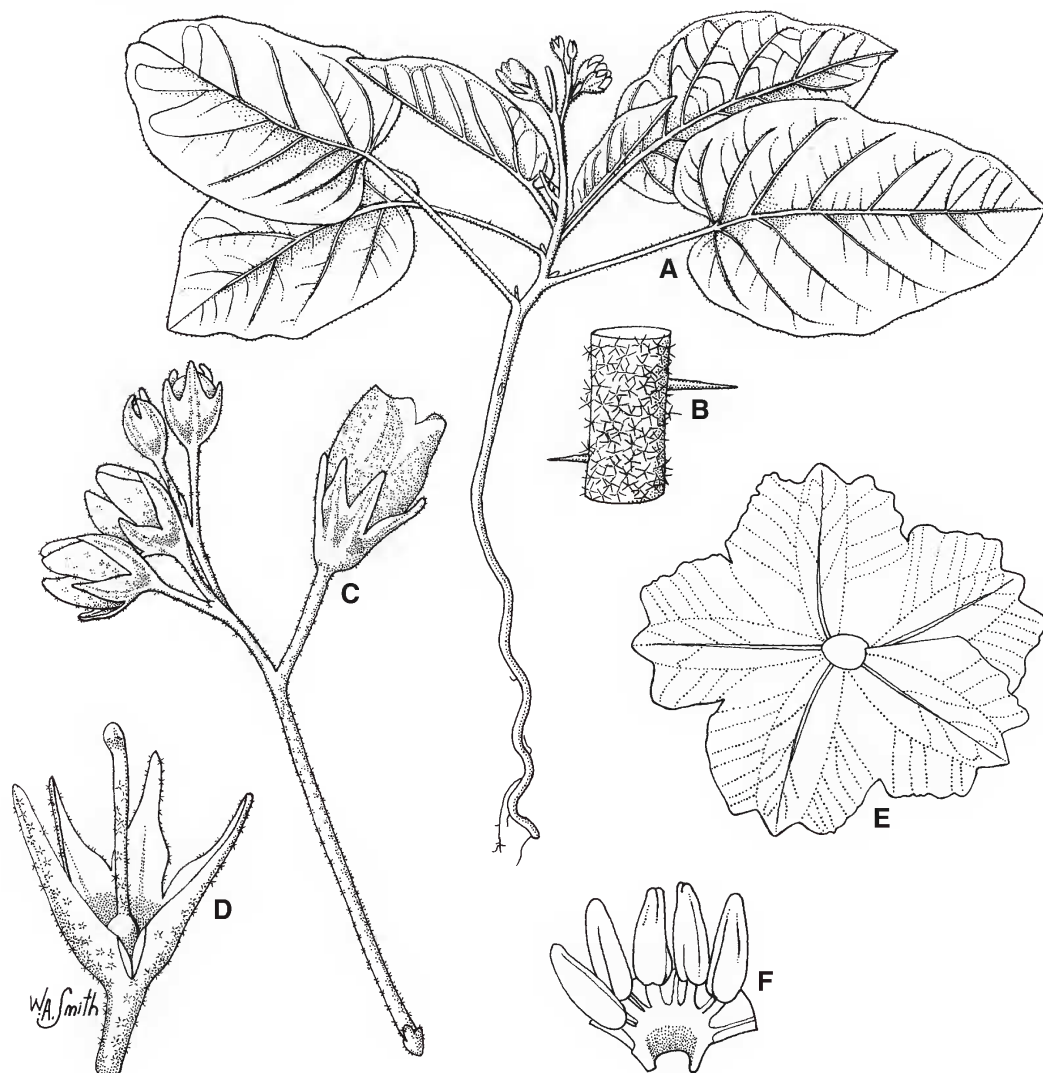


Fig. 2. *Solanum orgadophilum*. A. whole plant $\times 0.4$. B. portion of stem showing prickles $\times 6$. C. inflorescence $\times 1.5$. D. calyx (one lobe removed), ovary and style $\times 3$. E. corolla $\times 2$. F. stamens $\times 3$. All from *Bean 29648* (BRI). Del. W.Smith.

urban development) and weed encroachment (especially *Parthenium hysterophorus* L.). The recommended conservation status using the Red List criteria (IUCN 2001) is **Endangered** based on the criteria B1a,b(ii,iii,v)c(ii,iv)+2a, b(ii,iii,iv,v)c(ii,iv); C1+2b.

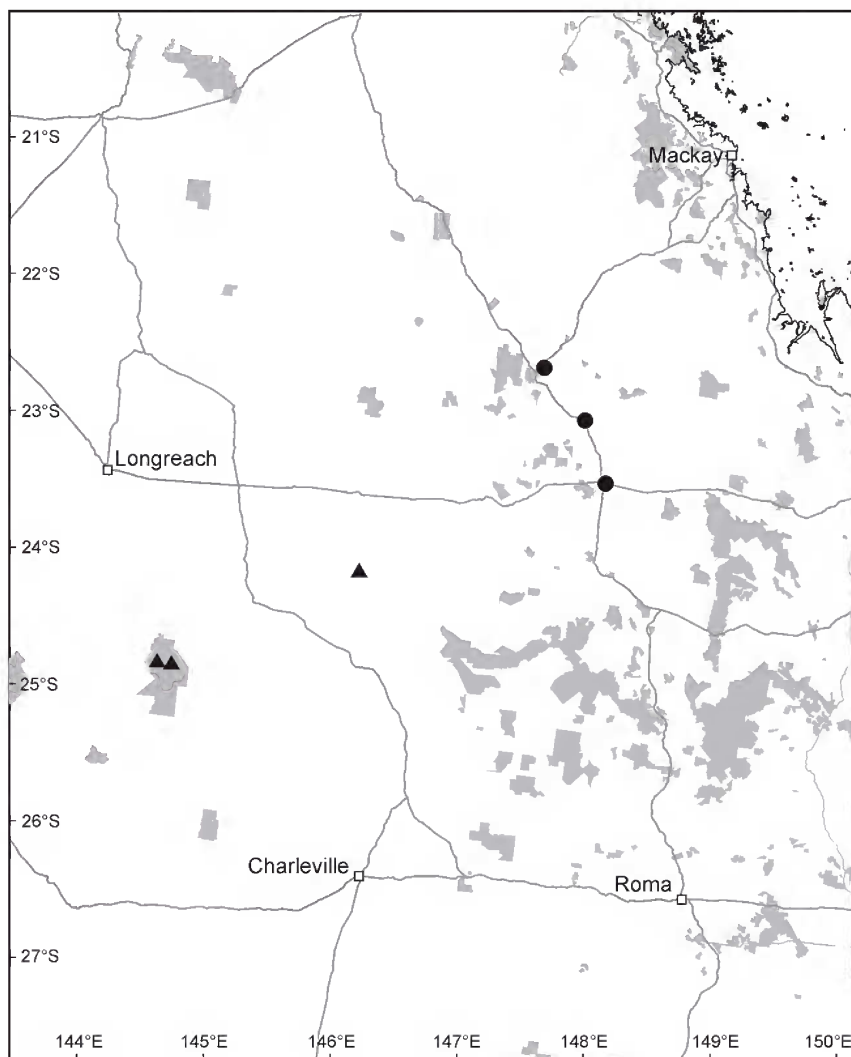
Etymology: The species epithet is from the Greek *orgados* (a meadow or well-watered fertile spot), and *philos* (loving). This is a reference to the habitat of this species.

Acknowledgements

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Map 1. Distribution of *Solanum pisinum* (▲) and *S. orgadophilum* (●)